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Influence of Temperature on the Separate Sexes of Flowers.—Mr. MEEHAN referred to his former observation, recorded in the Proceedings, that the male flowers in *Amentaceæ*, and other dioecious plants would grow, become perfectly developed, and mature the pollen under a temperature wholly insufficient to excite the growth of the female flower, which would remain undeveloped until a warmer temperature ensued. He had shown that the infertility of hickories, oaks, walnuts, hazelnuts, and other plants, a complaint common among orchardists in our country, arose from this fact, there being very little or often no pollen to fertilize the flowers in seasons when a few moderately warm days in winter would bring the aments to perfection a month or even months before the female flowers grew. This season we had no warm winter days, and at this time, middle of April, the aments in the hazelnuts and the female flowers were maturing together.

Mr. Meehan added that when he first reported these observations to the Academy he believed them wholly original, but he had since noted that similar observations had been communicated to the Horticultural Society of London, on the 18th of February, 1823, by Rev. George Swayne. "I entertain," says he, "a strong suspicion that the very frequent failures of the filbert crop (Mr. Williamson tells us that they totally fail three years out of five) are in great measure occasioned by a deficiency either in number or in power of the male blossom." He remedied this by experiment, by getting aments from other trees and hanging them in the trees that had lost them. This gentleman, however, did not apparently perceive the underlying principle that it took less heat to perfect the male flowers than the female flowers of the same species. It was quite possible this generalization might be carried out of the region of amentaceous or allied plants, and carried to a wide range of vegetable species, or even into zoology.

APRIL 28.

Mr. EDW. POTTS in the chair.

Fourteen persons present.

A paper entitled "On the genus *Aphredoderus*," by Willis S. Blatchley, was presented for publication.

Mr. Philip Laurent and the Rev. J. R. Danforth, D. D., were elected members.

Elasticity in the Fruit of Cactaceæ.—At the last meeting of the Botanical Section, Mr. THOMAS MEEHAN exhibited fruit of *Mamillaria Heyderi*, and remarked on the elastic characters of this and other species. This *Mamillaria*, under culture, flowers in April

or May, and, after flowering there is no sign of any development in the fruit. The ovarium is, indeed, buried between the closely appressed walls of the bases of the mammæ. Here they remain, undiscernible, till just before the next flowering season, when they suddenly emerge, and in a single night apparently stretch out to their full length. All attempts, however, to get at the exact time of development had failed, for the fruit was always of full length when first observed. In this species, the fruit is about two inches in length, clavate and incurved, and, as they are bright red, and more than double the length of the mammæ, and produced in considerable numbers, the effect on a plant where they were wholly absent a few days before, is very striking. This same sudden appearance of the fruit a year after the ovaria had been fertilized, has been noticed in *Mamillaria Nuttalliana*, and some Mexican allied species. That the sudden development is the result of an elastic projection, and not of a proper growth, is manifest from the fact that the fruit is mature from its first appearance, has its dark red color, and succulence, and the seeds are perfect in color and size. Growth has to finish, in all fruits, before maturity is reached. A related form of elasticity has already been recorded by him in the *Botanical Gazette*. He has noted that after the maturity of the fruit of *Opuntia Bigelovii* the seeds are projected from the apex, and run down the sides of the fruit like lava from a burning mountain. In a letter to the speaker, Dr. Engelmann a short time before his death, referred to this observation as a matter of great importance as explaining a fact for which he had never been able to account, that fruit evidently seed-bearing, had generally been found by him to have no seed when cut open.

Mr. Meehan remarked that cases where ovaria, though fertilized, would remain a year without signs of growth, were not unknown. Indeed, large numbers of Coniferæ, and species of *Quercus* or oak had especially this peculiarity. There was often little or no growth in the fertilized fruit till the second year.

He knew of no author who had made any mention of this sudden and elastic development in the fruit of the Cacti, though the fact must surely have come within the view of some observers. Pfeiffer, Decandolle, Zuccarini, and other leading writers on Cactaceæ, seldom make any reference at all to the fruit, while Dr. Engelmann, who, of all others, has given us the most of what we do know in reference to this interesting part of the history of this plant, simply says in a few instances that the "fruit matures about the same time with the opening of the flowers." He had however, nearly perceived the fact in one instance. He notices in *Plantæ Lindheimerianæ* that in this very species (he then regarded it as *M. applanata*) "the scarlet fruit is still persistent, and forms an outer circle," while the new flowers are opening; and in the *Botany of the Mexican Boundary*, p. 9, referring to a closely allied species, *M. miacantha*, he says: "Fruit ripening

the second spring and summer, till then hidden between the bases of the surrounding tubercles, and for the greater part buried in the tissues of the plant; in spring the young fruit suddenly (in one or two weeks) grows to its full size, 9–12 or even 15 lines long, protruding far above the tubercles, and forming an interior (exterior?) scarlet circle, around the inner circle of rose-colored flowers.” He did not perceive that the development of the fruit was not a growth, but the emergence and stretching out of structure the actual growth of which had already been matured; that it was an elastic and not a growing fruit.

MAY 5.

Mr. JOHN H. REDFIELD in the chair.

Twenty-one persons present.

The following papers were presented for publication:—

“On the Air-bladder of Fishes,” by Charles Morris.

“A Review of the Genus *Phrynosoma*,” by Alan F. Gentry.

Spawning of Fulgur perversus.—Mr. JOS. WILLCOX remarked that during the month of March, 1884, and recently, during the past March, in Clearwater Harbor and Sarasota Bay, in Florida, he observed many egg-cases (more than a hundred) of *Fulgur perversus*, both recently completed and during the process of their formation.

When completed, one end of the string of egg-cases floats freely in the water, while the small end is fastened to a shell under the sand. Being thus anchored it is not liable to be removed from its original position by the force of the tide. Whenever both ends of the egg-case are found to be under the sand, the middle portion being above the surface in the form of a loop, the parent conch will always be attached to one of the ends, but invisible to the beholder. All the processes connected with the subject of the reproduction of this species are performed under the sand, until the egg-cases are completed. When about to spawn, a place is selected where the sand is not packed hard. At that time a disposition is manifested to assemble in communities, usually upon a sand-flat where the water is never deep, and where the receding tide leaves the egg-cases dry and exposed to the warm rays of the sun during a portion of each day. Many egg cases, however, are to be seen, which are always submerged. In such instances the eggs may require a longer time for their development. Although, during the early part of April, many egg-cases were observed that were completed, in no instance were the young shells found to be developed in them.

When the mollusk is about to spawn, it first descends into the sand deeply, and attaches the egg-case to a bivalve shell. As the